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tuting the Bennettitales. The latter or some allied stock he regards as the possible ancestors of the angiosperms, a probability which he considers strengthened by the incoming of the angiosperms as they became extinct.—E. C. JEFFREY.

Stem-thickening in monocotyledons.—It has been claimed that in palms secondary thickening by means of a merismatic zone occurs, as in *Dracaena*. STRASBURGER²⁸ has investigated the subject by a study of two stems of *Washingtonia filifera*, and finds no cambial zone, but instead a number of localized areas in the pericycle where fundamental tissue, bundles, and sclerenchyma are produced. An examination of stems of *Pandanus utilis* afforded similar results. Among the numerous details recorded is the observation concerning the arrangement of the leaves in *Pandanus*; following SCHWENDENER the author finds that this is due to torsion of the stem axis.

Another paper on Pandanaceae, by CARANO,²⁹ denies the existence of secondary growth in this family. Among other observations of interest is the crushing of vessels of the xylem at the leaf bases by growth of the wood parenchyma; this process seems to aid in casting off the old leaves. The bundles of the blade of the leaf show a horseshoe-shaped mass of phloem surrounding the xylem, and water-storage tissue is abundant along the median nerve. The root shows a number of large medullary bundles in addition to the peripheral ones, and to the former the lateral roots are attached. The roots springing from the stem are likewise connected with deeply situated vascular strands. These features hardly support the claim that this family is a primitive one.

In the palm *Euterpe oleracea*³⁰ the stem increases in thickness by the extraordinary growth of the mechanical tissue lying external to the phloem. This growth takes place after the stem has become hard and woody.—M. A. CHRYSLER.

Germination of dimorphic fruits.—ERNST³¹ has investigated the germinative characters of the dimorphic fruits of *Synedrella nodiflora*, a composite of the East Indian Archipelago. He finds that the fruits produced by the pistillate-ray flowers differ radically in form from those produced by the perfect disk flowers. Corresponding to these differences in structure, he finds differences in germinative characters. The disk fruits germinate both in light and in darkness to a higher per cent. and more quickly than do the ray fruits. In the disk fruits diminution in the intensity of the light or its complete withdrawal only retards slightly the first stages in the germination, although it defers considerably the

²⁸ STRASBURGER, E., Ueber die Verdickungsweise der Stämme von Palmen und Schraubenbäumen. Jahrb. Wiss. Bot. 43:580-628. pls. 3-5. 1906.

²⁹ CARANO E., Ricerche sulla morfologia delle Pandanacee. Annali di Botan. 5:1-46. pls. 1-5. 1906.

³⁰ KRÄNZLIN, H., Ueber das Dickenwachstum der Palme *Euterpe oleracea*. Ber. Deutsch. Bot. Gesells. 24:483-489. 1906.

³¹ ERNST, A., Das Keimen der dimorphen Früchten von *Synedrella nodiflora*. Ber. Deutsch. Bot. Gesells. 24:450-458. 1906.

development of the hypocotyl and the unfolding of the cotyledons. In the ray fruits diminution of the intensity of the light and its complete withdrawal cut down markedly both the speed and per cent. of the first steps of germination; while in darkness the germination never goes beyond the early stages. The favorable influence of white light on the early germination and the later development of the seedling of the ray fruits is due to the less refrangible rays. The strongly refrangible rays retard the early stages of germination of the ray fruits and inhibit the further development of the seedlings. While ERNST holds that the differences in the germinative characters of the two fruits are due to differences existing in the living portions of the fruits, it is possible, in the light of the results of another investigation,³² that they lie in the coats, and that his results with light of different intensity and refrangibility came from accompanying variations in temperature, of which apparently he kept no record.—WM. CROCKER.

A new type of Medulloseae.—The material described by SCOTT³³ was derived from an abandoned coal mine at Shore-Littleborough in Lancashire, which was opened for scientific purposes by its owner Mr. W. H. SUTCLIFFE, in honor of whom the new genus is named. It presents a strong general resemblance to *Medullosa*, but differs strikingly from it in the fact that it possesses a single axial protostele instead of the numerous concentric strands which are found in the latter genus. Another noteworthy feature is the exarch character of the wood, in contrast to the mesarch condition found in other *Medulloseae*. In spite of the simple character of the cauline vascular system, the leaf-strands are numerous and undergo complex branching and anastomosis. The foliar bundles are concentric. Secondary thickening is present to a very slight degree in the central cylinder of the stem. The complex leaf supply attached to a protostelic cauline cylinder is a unique condition, and, as the author has pointed out, may have resulted from a reduction of the central cylinder of the stem. This view may perhaps also be taken of the cambium, which is more likely to be vestigial than inchoative. Mucilage canals and reticulate peripheral bands of sclerenchyma are found to resemble those found in *Medullosa*. The photographic illustrations by Mr. L. A. BOODLE are of quite unusual beauty.—E. C. JEFFREY.

Items of taxonomic interest.—W. B. HEMSLEY (Hooker's *Icones Plant.* IV. 9:1906) has described the following 3 new genera from the Seychelles: *Indokingia* (pl. 2805) and *Geopanax* (pl. 2821) belonging to Araliaceae, and *Neoschimpera* (pl. 2810) belonging to Rubiaceae; and from China a new genus (*Sinowilsonia*, pl. 2817) of Hamamelidaceae.—O. STAPF (*idem*) has described a new genus (*Elaeophorbia*, pl. 2823) of Euphorbiaceae from western Africa.—W. H. BLANCHARD (*Rhodora* 9:4-10. 1907) has described 3 new species of *Rubus* from Connecticut.—E. HASSLER (*Bull. Herb. Boiss.* II. 7:1-4. fig. 1. 1907) has

³² CROCKER, WM., Rôle of seed-coats in delayed germination. *BOT. GAZETTE* 42:265-291. 1906.

³³ SCOTT, D. H., On *Suttcliffia insignis*, a new type of *Medulloseae* from the Lower Coal Measures. *Trans. Linn. Soc. London* II. 7:45-68. pls. 4. 1906.